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(71) Applicant (for all designated States except US): ROTHMANS OF PALL MALL (AUSTRALIA) LIMITED [AU/AU]; 26 Fendell Street, Granville, NSW 2142 (AU).

(72) Inventor; and

(75) Inventor/Applicant (for US only): WATTS, Graham, Richard [AU/AU]; 47 Ridgehaven Road, Silverdale, NSW 2752 (AU).

(74) Agent: HENSHAW, Damon; Davies Collison Cave, Level 10, 10 Barrack Street, Sydney, NSW 2000 (AU).

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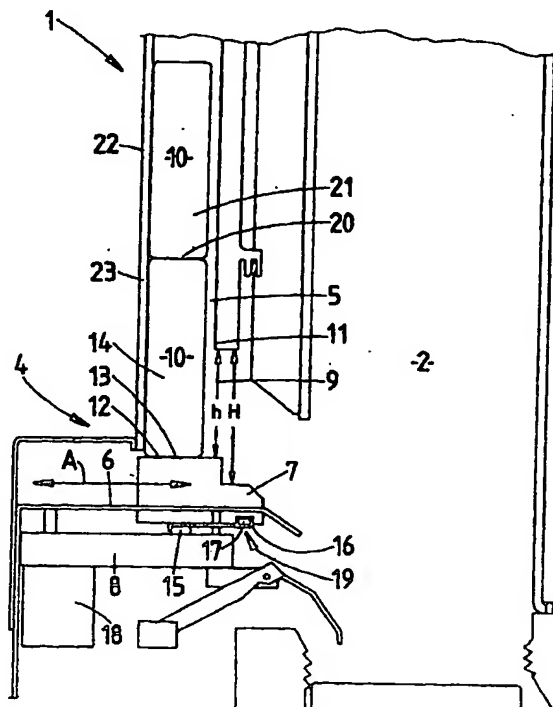
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With international search report.  
With amended claims.

(54) Title: DISPENSING UNIT

(57) Abstract

A dispensing unit (1) including a main chute (2) arranged to receive cigarette packs which are stacked in a horizontal orientation, for dispensing to a collection location, and a dispensing assembly (4) with a feed chute (5) communicating with the main chute (2). The feed chute (5) houses at least one vertically orientated cigarette pack (10) for dispensing to the collection location when the main chute empties of horizontally stacked packs.



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## DISPENSING UNIT

### FIELD OF THE INVENTION

5           The present invention relates to a dispensing unit particularly, but not exclusively, for dispensing an item such as a cigarette pack from a vertical orientation.

### BACKGROUND OF THE INVENTION

10           Two conventional methods of dispensing cigarette packs are known. Both methods dispense the cigarette packs from a horizontal orientation.

          A first of the methods involves stacking the packs in a shute and supporting the bottom pack on a moveable platform. The bottom pack is dispensed by firstly engaging  
15           a gripper assembly to hold a pack second from the bottom and swinging the platform away from a supporting position to displace the bottom pack into a vending location for collection by a purchaser. The platform is subsequently returned to the initial support position and the gripper assembly disengaged so that the pack, originally second from the bottom, falls onto the platform to become the next pack to be dispensed.

20           The second method comprises dispensing the packs from a stationary platform. Such a method utilises a finger element which projects above the surface of the platform and is connected to a continuous belt drive which extends along the length of the platform so that the finger engages an end of a bottom pack and simply pushes the pack off the end  
25           of the platform. The finger itself follows an arc over the edge of the platform and is returned to a start position via the belt drive, thereby allowing a second pack to drop directly onto the platform for subsequent dispensing.

          It is an object of the present invention to provide a new dispensing system  
30           particularly, a system which is suitable for dispensing cigarette packs from a vertical

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SUMMARY OF THE INVENTION

In accordance with the present invention, there is provided a dispensing unit for dispensing stored items including a main chute arranged to receive items which are stacked in a horizontal orientation for dispensing to a collection location and a dispensing assembly, for dispensing vertically orientated packs from a feed chute, to the collection location, the assembly including:

a feed chute for housing at least one vertically orientated item;

a support platform; and

a drive component including a support surface for initial support of a lower end of the item, the drive component being adapted to move between a first position supporting the item, to a second position adjacent the item whereby the lower end of the item drops down to rest on the support platform, the component being arranged so as to return to the first position to thereby engage and displace the lower end of the item from the platform.

Preferably, the items comprise cigarette packs.

Preferably, the assembly includes a motor which couples to the drive component via a drive arm.

Preferably, the drive arm is coupled to a shaft of the motor and a cam mechanism is provided to couple the component and arm, the cam mechanism comprising a slot provided in the component and extending transverse to a direction of travel of the component when moving between the first and second positions, and an engaging boss mounted on the drive arm.

In another aspect, there is provided a dispensing unit for dispensing stored items, the unit including a main chute, arranged to receive items which are stacked in a horizontal orientation for dispensing to a collection location, and a dispensing assembly

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feed chute communication with the main chute to dispense said at least one item to the collection location after the main chute is emptied of the items stacked in the horizontal orientation.

5 Preferably the feed chute includes a viewing opening.

Preferably, the viewing opening extends substantially the length of the feed chute and is preferably formed by a transparent glass or plastics cover.

10 BRIEF DESCRIPTION OF THE DRAWINGS

The invention is more fully described, by way of non-limiting example only, with reference to the accompanying drawings in which:

15 Figure 1 is a side view of a unit with a dispensing assembly in accordance with the invention;

Figure 2 is a side view of a drive component of the assembly of Figure 1; and

20 Figure 3 is a side view of the unit of Figure 1 in use.

DETAILED DESCRIPTION

25 A dispensing unit 1 is shown in Figure 1 as including a main chute 2, arranged to receive horizontally stacked cigarette packs (not shown) for dispensing to a dispensing location 3, and a dispensing assembly 4 for dispensing vertically oriented packs 10 from a feed chute 5 to the dispensing location 3.

30 The assembly 4 includes a support platform 6, a drive component 7, a drive unit 8 and the feed chute 5 which is provided with an opening 9 formed in its lower end 11.

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includes a support surface 12, on which a lower end 13 of the bottom pack 14 rests. The drive component is coupled to a drive arm 15 so as to move in a direction indicated by arrow "A" from the first position shown in Figure 1 to a second position, shown by dash lines in Figure 2. The component 7 includes an elongate slot 16 which extends transversely to the direction of travel "A". The slot 16 receives a boss 17, of the drive arm 15, which is in turn coupled to a motor 18 of the drive unit 8. Such a connection between the drive arm 15 and the component 7 is effective in providing a cam mechanism 19 whereby a complete revolution of the drive arm results in translation of the component 7 from the first position, to the second position and back to the first position.

Pack 14 may therefore be dispensed by engaging the drive motor 18 so that the drive arm executes a single revolution. As the component 7 moves to the second position, the pack 14 drops down onto the support platform 6. When the arm returns from the second position, the component 7 engages the lower end 13 of the pack 14 and pushes it to the right as shown in Figure 3, to displace the lower end of the pack 13 off the support platform 6 so that the entire pack 14 falls free of the platform 6, through the opening 9. The component 7, in the first position, is already in place to receive a lower end 20 of a pack 21 which was originally second from the bottom.

Provision of the support surface 12, in addition to the support platform 6, results in the effective height of the opening 9, being reduced from its maximum height 'H', when the arm is in the second position, to a reduced height 'h', when the arm is in the first position for supporting a pack 14 or being ready to support the pack 21. Accordingly, the full height 'H' of the opening is only available to a pack which is in the process of being dispensed. Otherwise, the reduced height 'h' serves to prevent the packs 9 exiting the chute. Such a variation in the effective height of the opening 6 makes the present invention particularly suited to dispensing vertically orientated packs, which may otherwise tend to spill out of the chute 5.

The feed chute 5 includes a cover 22 which preferably includes a viewing opening

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5 formed of transparent glass or plastics to allow the contents of the chute to be viewed. This provides a two-fold advantage in that the number of packs 10 in the chute can be readily determined so that more packs can be inserted in the chute or ordered for replacement, as well allowing a customer to view the type of packs available for dispensing.

10 The dispensing unit 1 may include a suitable gripper assembly 32 and a platform 33, arranged to pivot from the position shown, in which a pack 34 is supported at location 3, to another position in which the pack 34 is no longer supported and is instead dropped into a collection location (not shown).

15 The main chute 2, being arranged to receive a stack of horizontally orientated cigarette packs allows for maximisation of storage capacity of the unit. When the stack of horizontally orientated packs is completely or almost fully dispensed, the vertically orientated packs may be dispensed from the assembly 1, into the main chute 31 to adopt the horizontal orientation shown on the platform 33.

20 Again, a viewing opening 23 will alert a vendor that the unit needs restocking whilst providing a visual indicator to customers of cigarettes which are still available.

It is envisaged that the feed chute 5 may be adjustable in a depth direction to receive variable width packs by altering the position of an adjustable inner sleeve 35.

25 Further, it can be appreciated that the invention provides a new dispensing unit, with a dispensing assembly, particularly suited for vertically orientated cigarette packs, but may also be applicable to any form of item whether arranged vertically, horizontally or otherwise.

30 Finally, it is to be understood that the inventive concept in any of its aspects can be incorporated in many different constructions so that the generality of the preceding

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alterations, modifications and/or additions may be incorporated into the various constructions and arrangements of parts without departing from the spirit or ambit of the invention.



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## THE CLAIMS

1. A dispensing unit for dispensing stored items including a main chute arranged to receive items which are stacked in a horizontal orientation for dispensing to a collection location and a dispensing assembly, for dispensing vertically orientated packs from a feed chute, to the collection location, the assembly including:

a feed chute for housing at least one vertically orientated item;

a support platform; and

a drive component including a support surface for initial support of a lower end of the item, the drive component being adapted to move between a first position supporting the item, to a second position adjacent the item whereby the lower end of the item drops down to rest on the support platform, the component being arranged so as to return to the first position to thereby engage and displace the lower end of the item from the platform.

2. A unit as claimed in claim 1, wherein the assembly includes a motor which couples to the drive component via a drive arm.

3. A unit as claimed in claim 2, wherein the drive arm is coupled to a shaft of the motor and a cam mechanism is provided to couple the component and arm, the cam mechanism comprising a slot provided in the component and extending transverse to a direction of travel of the component when moving between the first and second positions, and an engaging boss mounted on the drive arm.

4. A dispensing unit for dispensing stored items, the unit including a main chute, arranged to receive items which are stacked in a horizontal orientation for dispensing to a collection location, and a dispensing assembly including a feed chute for housing at least one of the items in a vertical orientation, the feed chute communication with the main chute to dispense said at least one item to the collection location after the main chute is emptied of items stacked in the horizontal orientation.

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5. A unit as claimed in any one of the preceding claims, wherein the feed chute includes a viewing opening.
6. A unit as claimed in claim 5, wherein the viewing opening extends substantially the  
5 length of the feed chute and is preferably formed by a transparent glass or plastics cover.
7. A unit as claimed in any one of the preceding claims, wherein the items comprise cigarette packs.

## AMENDED CLAIMS

[received by the International Bureau on 11 November 1998 (11.11.98);  
original claims 1-7 replaced by new claims 1-8 (2 pages)]

## CLAIMS

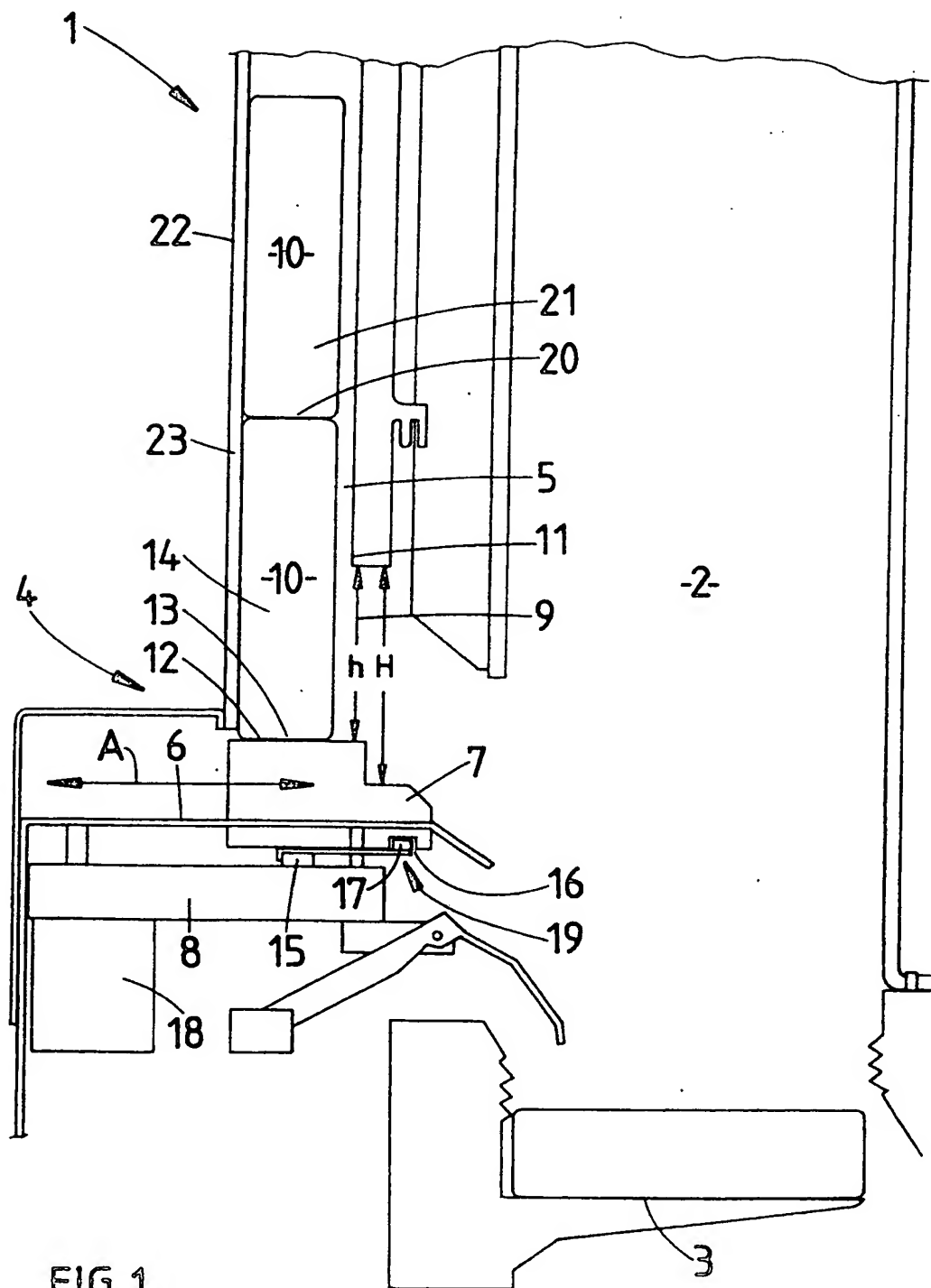
1. A dispensing unit for dispensing stored items, the unit including a main chute, arranged to receive items which are stacked in a horizontal orientation for dispensing to a  
5 collection location, and a dispensing assembly including a feed chute for housing at least one of the items in a vertical orientation, the feed chute opening into the main chute to deliver said at least one item into the main chute in a horizontal orientation, from said vertical orientation, for subsequent dispensing.
- 10 2. A dispensing unit as claimed in claim 1, wherein said at least one item is delivered from the feed chute after the main chute is emptied of items stacked in the horizontal orientation.
3. A dispensing unit as claimed in claim 1 or 2, wherein the assembly includes a support  
15 platform and a drive component including a support surface for initial support of a lower end of said at least one item, the drive component being adapted to move between a first position supporting the at least one item, to a second position adjacent the at least one item whereby the lower end of the item drops down to rest on the support platform, the component being arranged so as to return to the first position to thereby engage and displace the lower end of  
20 the item from the platform.
4. A unit as claimed in claim 3, wherein the assembly includes a motor which couples to the drive component via a drive arm.
- 25 5. A unit as claimed in claim 4, wherein the drive arm is coupled to a shaft of the motor and a cam mechanism is provided to couple the component and arm. the cam mechanism comprising a slot provided in the component and extending transverse to a direction of travel of the component when moving between the first and second positions, and an engaging boss mounted on the drive arm.

6. A unit as claimed in any one of the preceding claims, wherein the feed chute includes a viewing opening.

7. A unit as claimed in claim 6, wherein the viewing opening extends substantially the  
5 length of the feed chute and is preferably formed by a transparent glass or plastics cover.

8. A unit as claimed in any one of the preceding claims, wherein the items comprise cigarette packs.

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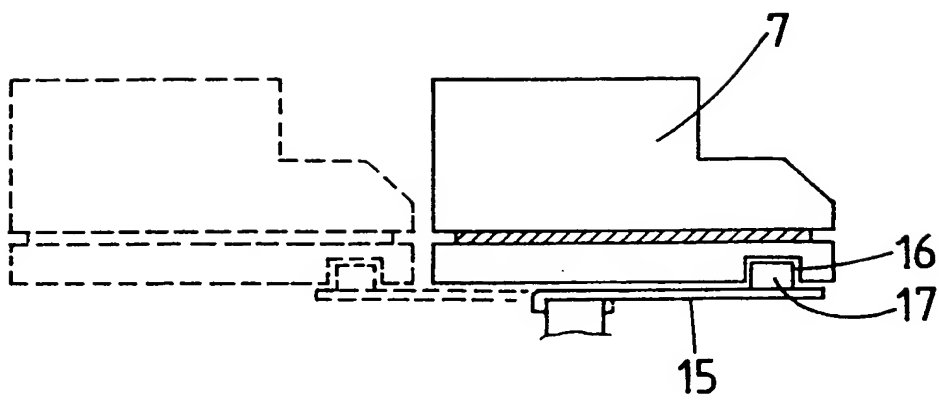
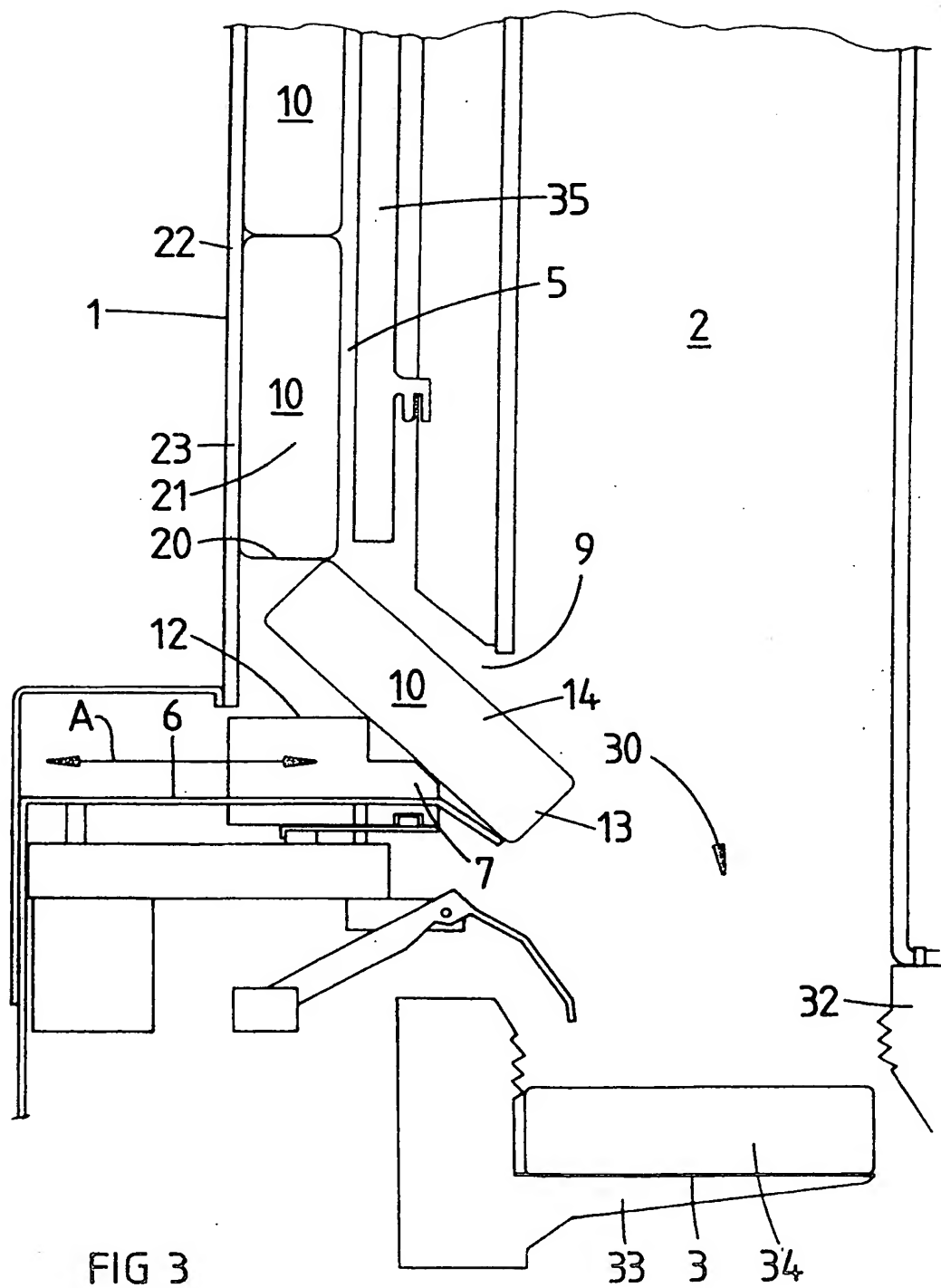


FIG 2

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## INTERNATIONAL SEARCH REPORT

International Application No.  
PCT/AU 98/00547

**A. CLASSIFICATION OF SUBJECT MATTER**

Int Cl<sup>6</sup>: G07F 11/10, 11/12, 11/16, A47F 1/10

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC G07F 11/10, 11/12, 11/16, A47F 1/10

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
AU: IPC as above

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**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2371845 A (ROBISON) 20 March 1945 Page 2 col 1 line 66 - col 2 line 1, figs 2, 4, 5.	4-6
X	US 2267144 A (STEINER) 23 December 1941 Page 2 col 1 line 46 - page 3 col 1 line 32, figs.	1, 4-7
A	US 3175729 A (TYTE) 30 March 1965	

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Date of the actual completion of the international search  
6 August 1998

Date of mailing of the international search report  
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C (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
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A	US 2304533 A (BRIGHT) 8 December 1942	4
A	US 2218657 A (RICHARDSON et al) 22 October 1940	
A	US 1621971 A (CURTIS) 22 March 1927	

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